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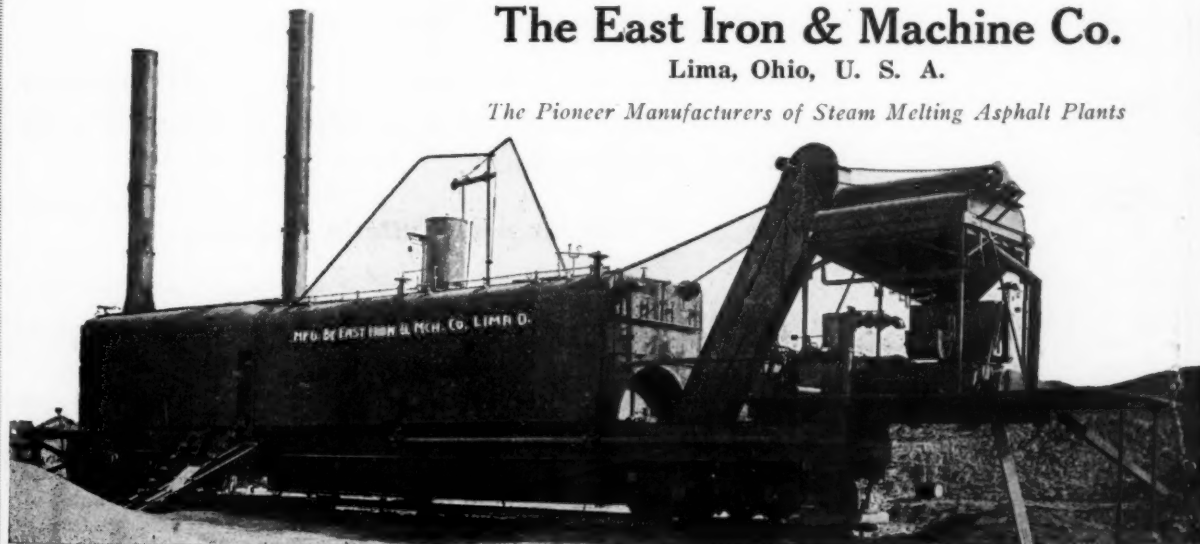
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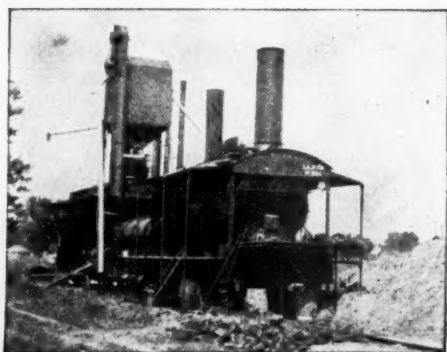
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Municipal Journal

Volume XLVI

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REPAIRING PAVEMENT OPENINGS

Practices of Several Hundred Cities as to Methods of Restoring Pavements—By City Employees or by Parties Making the Opening—Charges by Cities for Making Repairs—Minimizing Number of Pavment Cuts.

One of the causes most common and conspicuous in hastening the deterioration of a pavement is the making of cuts in the same for the purpose of laying pipes, either main or service connections, or making excavations in order to repair such pipes, or for other reasons. With the best of workmanship it is none too easy to patch a pavement in such a way that it will be as sound and durable as before and that the patch will not be visible as an eye-sore. If great care and skill are not used, a few patches to a block may so disfigure a pavement and, what is more serious, may cause such depressions in it as to greatly diminish its value as a smooth pavement and shorten its serviceable life.

The ideal would of course be to absolutely prevent cutting openings in a pavement, but we believe that no city has yet found this to be possible. It is undoubtedly possible, however, to greatly reduce the number of openings: especially in the first few years after the pavement is laid, and also to use greater skill and care in restoring the pavement so as to minimize the injurious effect of the cut. It is now a more or less common practice, especially in the larger cities, to give notice to the fact when a new pavement is to be laid in a given street and of the ordinance and regulation of the city requiring that for a given period thereafter (generally not less than two nor more than five years) no permit will be granted for opening that street. Such a warning as erected by the city of Cleveland is shown in the accompanying illustration. New York City posts similar warning signs, except that they are much smaller, being approximately 18 by 24 inches and are fastened to lamp standards or other posts at the ends of each block to be paved. The warning should in this or some other way be brought prominently to the attention of all concerned.

Public service corporations and municipal departments should be notified directly by letter and requested to complete all underground construction or repairs that are contemplated or likely to be needed within the next several years.

It is, of course, necessary to grant permits for emergencies such as repairing leaks or breaks; but the city officials in charge should maintain a stiff backbone and adhere to the ruling, especially refusing permits for any new pipes or other structures. This ruling should be enforced as rigidly on the water and sewer departments as on any other parties. In many cities the municipal departments are the worst offenders. The Department of Water Supply of New York City until a few years ago was continually opening pavements that were only a few days or weeks old and did hundreds of thousands of dollars damage to pavements in this way.

Given two or three months of working weather after such a warning: and it should be possible to arrange for and lay all underground structures that may be needed, including service connections to the curb. Those who do not take advantage of the opportunity should suffer for their delay by an additional enforced delay for the designated period.

WHO REPAIRS CUTS?

In spite of all precautions, however, it will be necessary to make occasional cuts in pavements. In replies to a questionnaire sent out a few weeks ago, about 300 city engineers informed us of the practice of their cities in repairing such cuts. This information has been tabulated and arranged by sections of the country, and is summarized below.

The first questions asked was as to who was in charge of making the repairs, the city or the parties who made the opening. Totalling the entire country, 145 cities, or



CLEVELAND'S NOTICE OF PROPOSED PAVING.

56 per cent. had the pavement repairs made by the city employes; while 96, 37 per cent. permitted or required the parties in whose behalf the opening was made to make the pavement repair; and in 18 cities the repairs were made sometimes by the city and sometimes by private parties. In quite a number of those cities in which pavement repairs were made by private parties, probably about one-quarter of them, it was stated that such repairs were made under the supervision of some city official, and it is quite probable that in a number of other cities this is the rule also but that the fact was not stated.

Classified by districts, these figures are shown in the table.

VARIOUS PRACTICES CLASSIFIED BY DISTRICTS.

VARIOUS METHODS CLASSIFIED BY DISTRICTS.							
	Pavement Restored	Over Cuts By	Method of Replacing Concrete Base				
	City.	Parties making opening.	Both or either.	Overlap edge of trench.	Overlap and make heavier.	Do not overlap.	Reinforce concrete.
New England	11	2	3	12	0	1	3
Middle Atlantic	29	28	3	51	4	17	14
South Atlantic	9	2	0	5	2	1	4
Gulf	8	3	0	5	0	5	1
Central	30	41	7	55	9	11	16
North Central	35	14	1	36	3	6	17
Rocky Mountain	7	2	1	4	2	4	0
Pacific Coast	9	4	3	11	2	4	2
Canada	7	0	0	4	0	1	3
	145	96	18	183	22	50	60
Per Cent.	56	37	7	68	8	18	22

Two cities announced that the work of making pavement repairs was done by a contractor selected by the city, but paid, we presume, by the party making the opening. Three cities announced that as yet no cuts have been made in any pavements in their streets; from which we judge, based on experiences elsewhere, that permanent pavements have but recently made their appearance in those cities. In Pittsburgh, Pa., and one or two other cities, the party opening the street makes temporary repairs to the pavement, and later, when the back-filling has presumably finished settling, the city makes permanent repairs. Several cities made note of the practice (which prevails in quite a number) of an arrangement with the contractor for guaranteed pavements whereby said contractor replaces all cuts in pavements made by him. In a few cities it was stated that if the party making an opening failed to replace it properly within a given time the city performed the work and charged him for it.

In several of the replies the writer stated that, although it was not the practice in their cities, it was their belief that the city should itself make all pavement repairs rather than permit it to be done by plumbers or parties even less reliable and experienced in street paving work. The fact that in 56 per cent of the cities reporting, these repairs were made by city forces, while in an additional 7 per cent some of the repairs were so made indicates that this is the prevailing opinion, especially in view of the fact that it is simpler and more in line with the ordinary practice of a few years ago to leave the whole affair in the hands of the plumber, gas company, or other party opening the street.

In Champaign, Ill., a regular form is employed which is filled out by the city official in charge, giving the complete description of the work of making a repair. This form contains spaces for the name and address of the party digging the trench, the location of the opening and the description of the work, the date commenced and date finished, number of job and date when billed. Under the heading of "Labor" is filled out the name of

each man working on the job, the position which he occupied, hours on the jobs, rate per hour and total amount charged to the job. Under the head of "Materials" are recorded the items (cement, gravel, sand, etc.), the quantity, unit cost and amount, with the total cost of material; under which are spaces for materials returned, such as empty cement sacks, for which credit is given. On the other side of the form is space for a sketch by which the exact location of the repair is indicated; also a summary of the items on the other side under the heads of "total labor," "total material," "overhead," and "total cost." Also a space for a detailed description of the work. In the sample sent us, under the head of "labor" was listed a foreman, two-horse team

and driver, three laborers, one water boy and a one-horse wagon. Under "material" cement, gravel, sand, $\frac{3}{8}$ -inch steel rods, paving brick, and cinders. The labor totaled \$12.64; material, \$5.85; no charge for overhead. The work was described as follows: "This ditch was originally filled in with frozen dirt by the Reliable Plumbing and Heating Company. The dirt melted, causing caving, and necessitated refilling and tamping twice with cinders. To make permanent repair, the hole was excavated to 12 inches below surrounding pavement, bricks were removed and concrete cut wide enough to give $\frac{3}{8}$ -inch reinforcing bars one foot of solid bearing on each side, and on this well-tamped surface a 7-inch reinforced concrete base was spread. After hardening, a one-inch sand cushion (mixed one part cement to six parts sand) was luted to grade and a sand-filled brick pavement was relaid. All good brick was cleaned and used again. Hauling consisted of four yards of cinders to, material to, barricade and tools to and from, and all refuse from job; average haul one-half mile. Size of hole for brick and concrete 10 feet by 4 feet = 4.44 square yards, and 0.86 cubic yards of concrete."

In most cities there are regulations governing street openings, under which those making openings are required to either file a bond for a year or a bond for each application, or to make a cash deposit to be returned after the repaving is satisfactorily performed, or the balance returned after the city has made the repair and deducted from the cost thereof. Unfortunately, there are some cities (especially the smaller ones, we believe) which do not have or at least enforce any such regulations, but in which street openings are made by plumbers or others without even the formality of obtaining a permit from any city department.

CHARGE BY CITY FOR REPAIRS.

The principles upon which the cities base their charges for replacing pavement vary in different cities. Seventy-two cities reported that they charge the "cost" of the work, "actual cost," "total cost," etc. Eighteen others charge cost plus a percentage, the percentage being 5

in one case, 10 in nine cases, 15 in five cases, 20 in one case, and unstated in two cases. Cost plus a fixed sum is charged by four cities, three charging \$5 additional and the fourth "the overhead." One charges "cost plus material damage to street as a whole."

Most of the remainder, 36 in all, make a fixed charged per square yard or square foot of pavement restored. Among the charges are: "50 cts. a sq. ft.—a minimum of \$5." "Asphalt macadam \$2.50, brick \$5, wood block \$6 per sq. yd." "\$4 per yd. for brick, \$3 for asphalt \$2 for macadam." "\$4 for gravel, \$6 for brick, \$8 for concrete." "Same per yard as original cost." "\$2.50 for bituminous and cement concrete, \$4 for granite block." "\$5 per opening on unpaved, \$10 on paved." "Wood block 50 cts. per sq. ft., asphalt 45 cents., brick 35 cts., bituminous macadam 25 cts., concrete 25 cts." "\$5 per first sq. yd., \$2.50 for each additional sq. yd." "Amiesite on macadam base, 30 cts. per square foot; Amiesite on concrete base, 35 cts. per square foot; Dolorway on concrete base, 30 cts. per square foot; brick on concrete base, 40 cts. per square foot; wood block on concrete base, 55 cts. per square foot; macadam or stone-surfaced streets, 10 cts. per square foot; streets not paved or macadamized, 5 cts. per square foot." In the last case a reduction of 15 per cent is made where the area exceeds 200 square feet; and in calculating the area where there is a concrete base or concrete pavement, the area paid for includes one foot additional on all sides of the opening. In one city, a "lump sum estimated in each case." In another city "actual cost plus \$1 for restoration that costs \$10 or less, and plus 10 per cent for more than \$10."

METHOD OF MAKING PAVEMENT REPAIRS.

Of about 300 cities replying to these questions, about 30 made no report as to the method of making repairs, or else stated that there were no pavements in their cities on concrete base. Of the 270 cities describing the method of replacing concrete base in pavement openings, 178 stated that in doing so they broke back the concrete so that the opening was wider than that in the earth beneath, thus causing the new slab of concrete base to overlap and rest upon the edges of the trench or other opening. In addition to these 178, six reported that they required this overlapping in some cases but not in all. Many of those reporting this overlap stated that they also beveled the edges of the concrete so as to give a wedge shape or keystone shape to the new concrete, and it is probable that a considerable percentage follow this practice. In at least two cases, however, it was specifically stated that the edge is cut square and vertical. One engineer reported that they had found that if the edges of the concrete were cut back sloping, when the concrete expanded and contracted by heat the new patch separated from the old, being wedged out. The amount of overlap varied from four inches to twelve inches, only four cities giving as low as four inches, twelve giving six inches, six giving eight or nine inches and fourteen giving twelve inches. The others did not specify the amount of overlap.

In addition to these 21 cities stated that they not only required the overlap, but also made the new foundation thicker than the original one. The amounts of excess thickness, where they were specified, were as follows: One, six inches thicker; one, six to ten inches; one with a total thickness of eight inches; one, twice the original thickness with a twelve-inch lap; one, two inches thicker with a twelve-inch lap; one, seven or eight inches thicker with a three-inch lap; one, six inches thicker with an eight-inch lap.

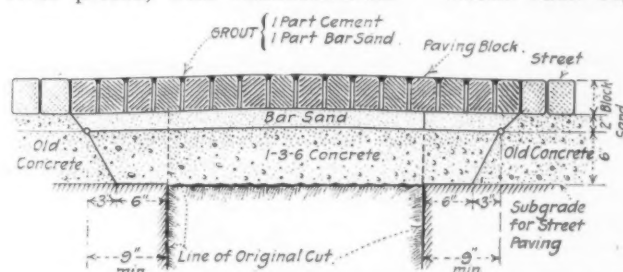
Fifty stated definitely that they did not make the new patch overlap the sides of the trench, but a considerable

percentage of these stated that they beveled the edges of the concrete, two stating that this bevel was given a slope of about 45 degrees; one, however, stating that the edge of the concrete was cut down square.

Five reported that they made the concrete thicker, but did not overlap.

That the use of reinforcement in concrete foundations is increasing was indicated by the fact that 45 cities reported the use of reinforcement in all patches and 15 that reinforcement was used in some cases. One reported the use of half-inch rods for this purpose, another the use of three-eighths-inch rods. Where the reinforcement was used under certain conditions only, these conditions were described as "deep trenches," "large openings," "if wider than two feet," "if more than thirty inches," "if very wide," "for extra heavy traffic." One city in California uses fabric reinforcement. Almost all of those using reinforcement report overlapping the concrete also.

The accompanying sketch, showing the method of making repairs at Reading, Pa., is typical of the plan apparently employed in most of the cities where the patch overlaps the sides of the trench. Among certain of the descriptions given of the methods of replacing foundation are the following: "Sides of cut thoroughly cleaned, made rough and vertical and loose chips removed; new concrete put in place and protected from traffic for 72 hours, being covered with wet sand bags." "Trench filled to within two inches of surface. Planks placed flush with pavement. Allowed to settle for one month, then excavated one foot deeper and one foot wider than old opening. Edges of old concrete beveled and new concrete placed, with reinforcement." "Break back edges



REPAIRS TO BREAK IN PAVEMENTS, READING, PA.
Backfill in layers not exceeding 3", to be moistened as directed and well tamped.

until fresh fracture is secured, wet down edges and then place concrete in order to secure good bond." "After the earth has been backfilled the operator must leave a bench eight inches wide all around the edge of the excavation six inches below the base of the wearing material, when it is turned over to the city for completion. The city then places the concrete base and charges the actual cost."

Three different methods of using reinforcement were described. In one of these, reinforcing bars, which extend across the opening, are given a double or Z bend at each end so that each bar rests upon the old foundation, the main part of the bar spanning the opening four inches below the top of the old base, which was five inches deep; the face of the concrete in this case having been broken off vertical. In another case, where the edge of the concrete was broken back sloping, the reinforcing bar was bent so that, when in place it followed parallel to the top of the old base for two or three inches, followed parallel to the sloping edge, and extended horizontally across the opening, the other end being similarly parallel to the concrete base on the other side. In the third plan, straight bars were used of such length that, when placed across the opening with the ends resting on the sloping edges of the concrete, the

bars would be at or slightly below mid-depth of the concrete base. One engineer reported that "the method, sad to relate, here in P—, is up to the parties making the opening, and the result of their efforts is a botched job nine times out of ten."

Quite a number of the engineers stated that they considered the backfilling of the trench of even more importance than the method of placing the concrete. One or two said that if the backfilling was properly compacted, there was no need for beveling the edge of the concrete or for using reinforcing. There may be some soils where it is possible to secure backfilling which, in at least nine times out of ten, will not settle further; but we believe that soils where this can be done are rare, except in the cases (which are equally rare) where the entire backfilling is done by men sufficiently experienced and conscientious to obtain such uniformly perfect work in every case.

Several cities report leaving the opening with only a temporary filling, postponing permanent repaving for two weeks, a month, or in one case a year. Meantime, the opening is filled in with broken-up concrete, bricks, stone blocks, planks, etc. The objection to this practice, in our experience, is that during the weeks or months while traffic is using the street, including the place thus temporarily filled, the edges of the opening are broken down, the bricks or blocks around the opening are loosened, the sand cushion is jarred or washed out from under the blocks, and in general the pavement is affected injuriously for a distance sometimes amounting to several feet around the opening. This increases the cost of making the repair to as much as the precautions of overlapping and reinforcing would amount to, there is a tendency to fail to relay as much of the disturbed pavement as should be, and during the presence of the temporary repair the pavement is rough and gives poor service. The backfilling should, of course, be compacted as thoroughly as possible, in order that, if a settlement should occur, it would be limited in amount; also in order that the bench of earth on which the overlapping patch in the concrete base rests may be supported against displacement as fully as possible. It is very difficult, however to so compact a trench that there will not be a settlement of at least a half inch or so, and a drop of this amount in a hard-surface pavement is not to be tolerated; for which reason the taking of all possible precautions for supporting the pavement independent of the new backfilling is, in our opinion, warranted.

WATER CONSUMPTION IN DETROIT.

Maximum Daily and Hourly Consumption—Use and Advantages of Meters—Computation of Saving Effected by Such Use.

In his 1918 report, George H. Fenkell, general manager, for the Board of Water Commissioners of Detroit, Mich., gives an interesting discussion of the matter of water consumption in that city, and a calculation at some length of the saving to the city by the use of meters.

In the first place, all water is metered as it leaves the pumping station, and this eliminates from the calculation of consumption the pump slip and pumping station waste. Most of the water used for manufacturing is supplied through the city mains; for, although several that use large quantities at very low pressure, as for condensing purposes, take water from the river through private intakes, most of the manufacturing plants are located along the railroads at some distance from the river.

Leaks in the mains are less numerous than was formerly supposed and to a less extent this is true of service connections also. Since 1893 all mains have been tested at a water pressure of 80 to 100 pounds per square inch, and previous to March, 1918, such tests were made in the open trench. The use of water for lawn sprinkling, to prevent freezing, and the waste because of leaks in fixtures and plumbing, is rapidly coming under control through the general use of meters.

Large quantities of water are furnished without charge for public and charitable purposes. According to a careful estimate made in 1910, 7½ per cent of all water pumped during the fiscal year 1908-9 was used for public and charitable purposes. It is believed that this has now been increased to some extent, and that metering all connections as far as can be done reasonably, and charging each department and institution with all the water it uses, may reduce the quantity of water so used thirty per cent without causing inconvenience or working harm.

As Detroit is supplied with water by direct pressure, with no reservoir, the variations in consumption from hour to hour are easily observed. Records for the past nine years give the maximum daily and hourly consumption for each year as follows, the average for each year being taken as the basis or 100 per cent:

Year	Average Pumpage during year	Pumpage during max. day of year	Pumpage during max. hr. of year
1910.....	100%	138%	171%
1911.....	100	139	176
1912.....	100	139	159
1913.....	100	135	175
1914.....	100	134	164
1915.....	100	121	152
1916.....	100	124	151
1917.....	100	133	155
1918.....	100	145	157
Average.....	100%	136%	162%

INSTALLATION OF METERS

Although meters have been set during the past year at the rate of 97 per day during 300 working days, there are still 56,809 unmetered connections. Since 1910 meters have been placed as follows:

Year	No. of Taps	No. of Meters	Per Cent of Taps Metered
1910.....	87,822	8,827	10.1
1911.....	94,144	9,713	10.3
1912.....	101,158	10,807	10.7
1913.....	109,786	13,302	12.1
1914.....	118,410	17,051	14.4
1915.....	125,472	29,180	23.3
1916.....	134,369	46,991	35.0
1917.....	146,052	65,542	44.9
1918.....	151,439	94,630	62.5

During the winter of 1917-18, 4,088 meters were damaged by frost, of which 1,204 were located under kitchen sinks, generally in houses without basements; and 1,723 were damaged by hot water. Frozen meters and those damaged by hot water are repaired at the expense of the user.

Few consumers now object to meters, for it is well understood that meters benefit financially both the consumer and the city. For example, the consumption in dwelling houses has been examined by selecting a number from all parts of the city at random (see next page).

While it is not possible to determine with great accuracy what the flat rate would have been on the property listed above, a comparison of these payments with the flat rate charges for similar property will show a saving in favor of the meter charges of approximately one dollar per year per family.

It is also possible to show a great saving to the city at large due to the use of meters.

Consumption and Cost of Water in Dwelling Houses.

	No. of Houses Investigated	Size of Meter	Average Cost Per Quarter	Remarks
Dwelling house	400	5/8 in.	\$1.70	one family
"	89	3/4 in.	2.20	one family
"	11	1 in.	3.40	one family
"	142	5/8 in.	2.49	two families
"	54	3/4 in.	3.10	two families
"	4	1 in.	5.88	two families
"	10	5/8 in.	4.24	four families
"	72	3/4 in.	4.54	four families
"	18	1 in.	5.45	four families
"	17	5/8 in.	5.31	six families
"	11	3/4 in.	4.09	six families
"	63	1 in.	6.70	six families
"	9	1 1/2 in.	7.42	six families

From 1896 to 1912 the taps metered remained nearly constant at ten per cent, that is, during this period of 16 years only enough meters were set to cover one-tenth of the taps inserted. During this time the pumpage increased at such a rate that if allowed to continue would have reached, in 1918, 195 gallons per capita per day. By increasing the number of taps metered to 59 per cent, the consumption has been reduced to 152 gallons.

Year	Average Daily Consumption Per Capita Gallons	Per Cent of Taps Metered	Per Cent of Water Metered
1910.....	183	10.1	33
1911.....	177	10.3	35
1912.....	187	10.7	36
1913.....	175	12.1	37
1914.....	171	14.4	40
1915.....	162	23.3	41
1916.....	163	35.0	52
1917.....	165	44.9	59
1918.....	152	62.5	55

The expense of setting meters and the saving effected by their use can be arrived at reasonably close, although the 65,542 in use at the beginning of the year had been increased to 94,630 at the end of the year, June 30, 1918, and part of these new accounts were turned over from the flat rate ledgers during each quarter of the year.

The size of pipes, 12 inches and smaller in diameter, is determined by the needs of the neighborhood for fire protection, and the cost of that portion of the distribution system would not usually be affected by the use of meters.

The average daily consumption during the past year has been 144,704,009 gallons, or say 145 million gallons, of which, in even figures, 39 million gallons were used in the high service and 106 million gallons in the low service. Had there been no increase in the percentage of meters in use since 1912, the pumpage would now be at the rate of 195 gallons per capita instead of 152, and the average pumpage per day would now be 186 million gallons, of which 50 million gallons would be for the high service and 136 million gallons for the low.

Average Consumption in Million Gallons	Pounds friction between Pumping Station and Water Office		Average pressure at Pumping Station to maintain same pressure as at present at Water Office	
	At 10% of Taps Present	With only 10% of Taps Metered	At 10% of Taps Present	With only 10% of Taps Metered
	Present	Metered	Present	Metered
High Service 39	50	11.95	19.1	65.56
Low Service 106	136	4.19	6.1	45.57
	145	186		

At the beginning of the year there were 65,542 meters in service, and 94,630 at the end of the year. As a meter set late in the year had less effect on consumption than one set earlier, it is assumed that the number in service at the end of the first half of the year, about 80,000 is the average number to use in computing costs and effects.

Therefore the installation of 80,000 meters, less 10 per cent of the numbers of taps, or 65,000 meters, has reduced

the pumping station pressures 11 per cent for the high service and 4 per cent for the low service. As the pumping expense has been reduced approximately in like proportion, and as the pumping station expense during the past year was \$208,518.05, there has been a credit during the year because of reduced pumpage and pressures of \$69,506.00 determined as follows: $(50 \times 72.7 \text{ plus } 136 \times 45.7) \text{ divided by } (39 \times 65.56 \text{ plus } 106 \times 45.57) = 133.3\%$. $\$208,518.05 \times 33.3\% = \$69,506.00$.

The further credit due to construction work made unnecessary because of reduced consumption due to meters set since 1912 will now be determined:

Item	Total Cost	Cost per Million Gallons
Intake	\$204,000	\$785
Pumps, present	1,087,116	\$4,181
Pumps, under construction	627,375	2,413
Pumps, booster	53,000	204
Station, old	258,068	991
Station, new	647,375	2,490
Station, booster	307,000	1,180
Boilers, etc.	294,887	1,136
Miscellaneous	32,034	123
Land and Improvements ..	860,225	3,309
P. S. Force Mains	375,300	1,440
Conduits	319,614	1,230
Canal, etc.—Canal	35,295	135
Basin	36,980	143
Dock	13,575	52

Force mains, 16 in. to 48 in. in diameter 7,965,856 30,638 \$50,450

The interest charge and depreciation charge per million gallon capacity is computed and shown in the following table:

Item	Cost per Million Gallons	Interest Charge at 4 1/2%	Depreciation Rate 1 1/2%	Depreciation Charge	Interest Charge plus Depreciation Charge
Intake	\$785	\$35.33	1 1/2%	\$11.78	\$47.11
Pumps, etc.	6,798	305.91	2	135.96	441.87
Stations	5,920	266.40	1 1/2	88.80	355.20
Land and Imp'v'mts	3,309	148.91	148.91
P. S. Force Mains. 1,440	64.80	1 1/2	...	21.60	86.40
Conduits	1,230	55.35	1	12.30	67.65
Canal, etc.	330	14.85	2	6.60	21.45
Force Mains	30,638	1,378.71	1 1/2	459.57	1,838.28
	\$2,270.26			\$736.61	\$3,006.87

The saving of 41 million gallons per day in pumpage during the past fiscal year because of meters set since 1912 represents a credit in interest and depreciation of 41 million gallons \times \$3,006.87, or \$123,282. This, added to the credit in pumping station expense, \$69,506.00, gives the total yearly credit due to meters of \$192,388.00.

The average cost to the Board of meters in place has been \$6.78, divided as follows:

Cost of meter	\$6.48
Setting meter30
	\$6.78

Thus the installation of 65,000 meters represents an investment of \$454,700, and the interest and depreciation at 7 per cent amounts to \$31,829.00.

The yearly cost per meter follows:

Repairs	\$0.22
Reading	0.30
Overhead	0.065
Total	\$0.585

65,000 meters at \$0.585 equals \$38,025 and the total yearly expense amounts to \$69,854. This expense subtracted from the credit of \$192,788 shows the saving to the city during the past year due to meters set since 1912 in excess of 10 per cent of the taps in service of approximately \$122,934.

In computing the saving due to meters, it should be borne in mind that no charge has been made because of

cost to the consumer in preparing the plumbing for meter. While this cost is comparatively slight for new houses, it is estimated that for both old and new the average cost is \$10.00 each, or \$650,000 for 65,000 meters. Seven per cent of this amount is \$45,500, so that if this is deducted from the saving due to meters previously stated, \$122,934, and it is not at all certain that such a deduction should be made, there still remains a balance in favor of meters of \$77,434.

In many cases these figures are based on costs of work which have been completed some time, as for example, the intake crib and tunnel which cost \$204,000. Future work of this kind will cost more than double this amount. Then, too, the construction of large force mains in the immediate future, the laying of a considerable quantity of pipe in the down town district, and the building of a filtration plant, will all tend to increase the cost of supplying water and thus increase the saving due to meters.

It also pays to meter, because the careful, conservative consumer is not compelled to stand part of the cost of his neighbor's waste.

The many tons of coal saved during the past winter in Detroit through meters represent a much greater saving than can be expressed in dollars.

FEEDING BALTIMORE'S GARBAGE TO PIGS.

Probably the Largest Piggery in the World—Fifteen Thousand Pigs by May First—Terms of the Contract.

A contract was let by the city of Baltimore on December 21st, 1918, for disposing of its garbage by feeding to pigs, this service to begin May 1st, 1919, and continue until December 31st, 1923. Under this contract the city is to deliver the garbage to the contractor, who will pay the city annually therefor approximately \$31,500.

From 1882 to 1901 Baltimore's garbage was barged six miles down the river and spread over the ground as a farm fertilizer. From 1902 to 1908 the city paid annually \$147,300 for collecting, removing and disposing of the garbage, the contractor employing a reduction plant located in the heart of the city near the water front. This contract had been made for a period of ten years, but was terminated because of complaints of unsatisfactory collection and odors from the plant, the city purchasing the plant and collection equipment for \$372,888.19. Another company leased the plant from the city for \$10,000 a year, and contracted to dispose of the garbage for \$75,000 a year. This contract ran until Dec. 31st, 1917, and was then extended for a year, the contractor, however, paying no rental for the plant.

Since 1915 the city had been making extensive studies and exhaustive investigations to learn what method of refuse disposal was best suited to the local conditions; and in a report dated Jan. 28th, 1918, Walter E. Lee, water engineer of the city, recommended that garbage be disposed of by reduction in one central plant; ashes by filling ravines, low marshes and swampy ground along the water front for reclaiming land; and rubbish by incineration, in three municipal incinerators, of the combustible portions, except recoverable merchantable articles.

In accordance with this recommendation, bids were asked for April 17th, 1918, offering an eleven-year contract under which the city would deliver to the contractor at the water front all garbage produced from all

sources within the city, the contractor to pay a lump sum each year to the city. A flat offer of 35 cents a ton was received, the Cobwell process of reduction to be employed, but the Capital Issues Committee refused to approve the issue of stock for the erection of the plant and the bid was released.

Again bids were asked for, to be opened Oct. 16th, on alternate proposals on reduction and feeding to pigs, a sixteen-year contract for the former and five-year for the latter; but no bids were received. For the third time bids were invited, for Dec. 18th, on either reduction or feeding. In the case of reduction, a sixteen-year contract was offered, with a flat price per ton and an adjustment (to be stated by the bidder) in cents per ton for every upward or downward fluctuation in the market value of grease from a basic price of 8 cents per pound. The term for the feeding contract was five years, and an annual flat payment to the city for each ton of garbage delivered by the city. No bid was received for reduction and only one for feeding, and a contract under the latter plan was awarded December 21st.

THE PRESENT CONTRACT.

Under this contract the city will deliver the garbage to the contractor, this including towing it by barge to the site of the farm, the city realizing that collecting and removing garbage from the water-front dumping station was simply an extension of the collection and removal from the residences and a matter in which the contractor has no primary interest. It is estimated that barging and towing will cost the city about \$15,000 a year. The city will receive from the contractor for each ton of garbage three and one-half times the price per pound of live killing hogs on the Chicago market, as determined by averaging the top prices for each month.

Garbage is defined as "every accumulation of animal, fruit or vegetable food waste, containing not more than five per cent by weight of other refuse, generated by or resulting from the decay, deterioration, storage, preparation or handling of animal or vegetable matter in any place or at any point where food is prepared for human consumption, including all kitchen and dining-room refuse." The scales for weighing the garbage are located at the feeding site and all garbage is drained before weighing. The city will provide good primary separation and deliver the garbage in as fresh a condition as possible to the feeding site, with not less than four deliveries per week in summer and three deliveries per week in winter.

The specifications require that the piggery shall be operated subject to the general and local public laws and under the supervision of such veterinarian and sanitary officers of the county and state as have proper jurisdiction. The city also will employ a veterinarian who shall have continual supervision and inspection over the work of the piggery.

The garbage which is unfit for feeding or not consumed shall be removed from the feeding platforms, which shall be cleaned at least once a day, and disposed of by the contractor through sale or by plowing under the soil.

Until May 1st, 1919, at which time the piggery shall take the full quantity of garbage produced, the city, with its own forces, will temporarily dispose of its garbage by burying it in shallow trenches 18 inches deep and 5 feet wide, in which the garbage is placed 12 inches thick and covered with 6 inches of sandy soil. There will be 17,000 linear feet required to accommodate this temporary disposal of garbage until the piggery is in operation. The cost of the temporary dis-

posal is 85 cents a ton, against a former cost of \$1.06 per ton under reduction, the towing cost being included in both figures.

THE PIG FARM.

The 160-acre farm, on which the feeding operations will be conducted, is almost level and has sandy soil, insuring good drainage, with considerable water through an extensive shore line. Scrub pine, chestnut and oak timber affords protection from the summer heat. The farm is owned by the city and was purchased at an average price of \$140 per acre. It is situated on a point on the opposite side of the tributary of the Chesapeake bay on which the existing garbage reduction plant is located and this proximity to a plant which has been operating 11 years without any formal complaint or restraint is expected to insure a like operation of the piggery. /

The area of Baltimore is 80.5 square miles and the estimated population, with the recently annexed territory, is 720,000. It is estimated that 15,000 hogs will be required to accommodate the maximum amount of garbage produced during the summer peak and it will probably represent the largest piggery in the world and Baltimore will be the largest city of the United States which has adopted this method for its disposal of garbage.

Young shoats, vaccinated with cholera serum, will be purchased in the open market and shipped to the feeding station, where approximately 100 animals will be placed in each feeding lot, 70 ft. by 250 ft. in size.

PLAN OF OPERATION.

Garbage will be unloaded from the city's scows at the feeding site by the contractor, by the use of a locomotive crane with a grab bucket of one yard capacity.

The garbage will be dropped into steel rocker double-side dump cars of ten yards capacity each, on an adjacent track, and hauled by an oil-burning locomotive

directly down a lane between the feeding lots, as shown on the accompanying map.

The end of the feeding lots adjacent to the railroad will have a monolithic concrete feeding floor from which the animals are excluded by wide gates when the garbage is being dumped from the dump cars.

When the train has traveled the full length of its trip, the garbage will be spread on the return trip to the wharf by a spreader from the rear end of the train, after which the gates will be opened and each lot of hogs allowed to enter on the concrete feeding floors to eat the garbage.

It is confidently believed that disposal by feeding in a city the size of Baltimore does not entail any danger, as the size of herds necessary offers no greater problems than those present in herds numbering 5,000 and which have been successfully operated by the proposed contractor.

Disposal of garbage by feeding involves a relatively small capital investment which can be quickly and almost wholly liquidated at the expiration of the contract and in this respect differs from all reduction plants in which the machinery is of little use for any other purpose and possesses only a scrap value.

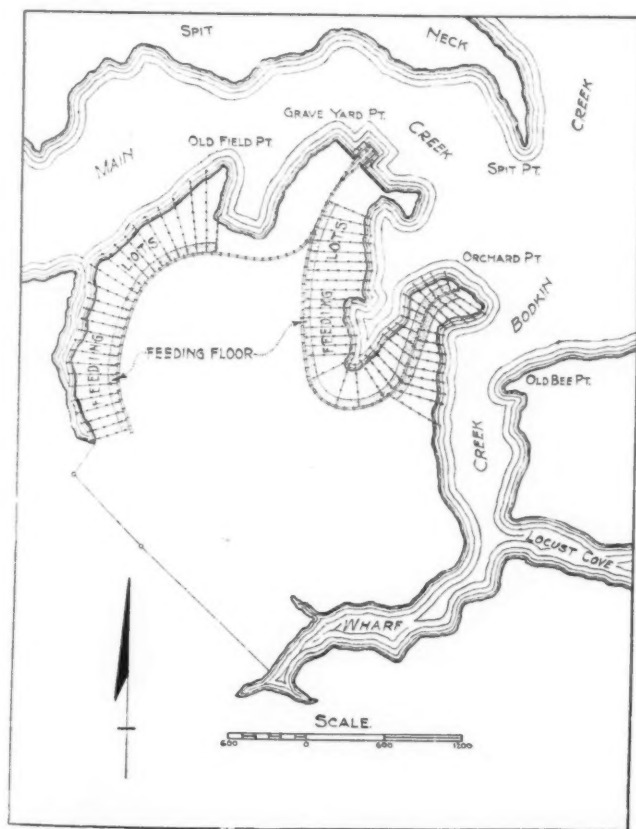
COLUMBUS WATERWORKS IN 1918.

Effect of War Prices on Department's Finances— Less Softening Chemicals Used—Costs and Results of Purification.

The report for the year 1918 of the waterworks of Columbus, O., by Jerry O'Shaughnessy, superintendent of the Division of Water and Sewage Disposal, gives considerable space to the discussion of the effects of war conditions, especially of war prices, upon the operation of the water purification plant of the city. Beginning with a balance of \$127,803 at the beginning of the year, this was reduced to a balance of \$50,979 at the end of the year. The large balance at the beginning of the year was due largely to the fact that that part of the appropriation for 1917 that had been intended for the purchase of chemicals for water softening was not exhausted because of the impossibility of procuring chemicals that year. This of course resulted in harder water during 1917 but the resulting saving made it unnecessary to raise the water rates this year, which would have been necessary had not the balance been available.

The expenditure in 1918 for the purification and softening of the water was a very large item in the operation of the plant, amounting last year to \$306,972, while the total cost of construction, operation and maintenance, including the pumping and the distributing system, was \$598,762. The cost of softening was greater last year than ordinarily, both because the river water was harder than in any previous year, and because the amount of water purified was greater; in addition to which, the price of chemicals was 25 per cent greater than the previous year. On the other hand, the expenditures for improvements were much less than ordinary, being only about \$43,000, while for ten years previous to 1918 they had in no year been less than \$125,000, and in 1912 and 1914 exceeded \$300,000 per year. Part of this reduction was made possible by the less requirements for extending main lines and services, due to the falling off in building and other improvements in the city.

The reduction, however, was much more than offset by the increased cost of operation and maintenance. Previous to 1916 this expenditure had never amounted to more than \$295,000, but in 1916 was \$394,000, in 1917



SITE OF BALTIMORE GARBAGE FEEDING FARM.

more than \$421,000, and in 1918 was \$582,774. The cost of purification increased over that of the previous year by \$103,271, but the cost of pumping was decreased \$3,721, owing to the lower cost of coal in 1918, although 1,593 tons more were used. One cause of increase not due to the war was the repairing of the large number of meters which had been damaged by freezing during the extremely cold winter of 1917-1918.

Even this increase in expenditure given above would have been much larger had not precautions been taken wherever possible to keep it at a minimum. The water consumption had been approaching dangerously near the available supply for several years and a report on increasing the supply had been made by John H. Gregory, but to meet the necessity for economy he recommended, as an immediate and temporary arrangement, the placing of flashboards on the dam in order to raise the level of the impounded water. This is recognized as a temporary expedient only, and it will be necessary, as soon as funds can be obtained, to make a permanent addition to the height of the dam or build an additional one. The construction of the flashboards cost only \$1,426, but enabled the city to furnish an adequate supply throughout the year.

Owing to the comparatively small number of new buildings, the number of meters in use was not greatly increased, only 572 being added. At the end of the year 96.66 per cent of the services were metered.

The cost of supplying water per million gallons pumped, based on total operating expenses, was \$71.28, the cost including interest on bonds and sinking fund charges being \$97.26.

In discussing the finances of the department, the report states that the city owes the department for water used through meters for municipal and charitable purposes the sum of \$93,498. Mr. O'Shaughnessy states that payment of this is provided for in ordinances and resolutions already passed by the council, and it is therefore referred to as "constitutionally and lawfully due the Division of Water."

The average amount of water softened and filtered per day during 1918 was 23,800,000 gallons, or 106 gallons per capita. This is just about 10 per cent more than in 1917 and 20 per cent more than in 1916. During 1913-1915 the filtered water had a total hardness of about 85 parts per million; but in 1917 this had increased to 125 parts, and was the same in 1918, this increase in hardness being due to the excessively high cost of chemicals. For instance, the prices in the year 1914 and 1918 respectively were as follows: lime, \$5.27 per ton and \$9.22; soda ash, \$13.30 and \$58.60; bleach, \$29.20 and \$54.56. Bleach and alum reached their maximum price in 1916, the former being \$85, and the latter being \$20.08 as compared to \$7.27 in 1915 and \$14.62 in 1918. These costs of alum represent the cost of the materials, the alum being made by the Division of Water.

The effect of the filters in reducing typhoid in Columbus has been remarkable. The filters were put into operation in 1908, in which year the typhoid rate among residents was 96.4 per 100,000, dropping the next year to 10.9, and no year since then exceeding 13.9, while during 1917 and 1918 the rates were 5.4 and 4.4 respectively. This reduction of death rates immediately following the installation of the filtration plant by from 85 to 95 per cent is certainly a remarkable showing.

It is the practice of the laboratory of the Division of Water to make not only presumptive tests for *B. coli*, but also confirmatory tests. During the year, thirteen of the 1 c.c. tests for *B. coli* were positive, but only three of these gave positive confirmatory tests, two be-

ing in October and one in December. Of the 10 c.c. tests 58 gave presumptive *B. coli*, and 24 of these gave positive confirmatory tests, the greatest number of such tests being in October and December. It may or may not be significant in this connection that, of the twenty deaths from typhoid during the year, fourteen were during the months of September, October and November. The chemist in charge, Charles P. Hoover, remarks in this connection, however, that "October being the first month of the influenza epidemic, it seems possible that some mistakes of diagnosis may have been made."

Another feature of the operation of the purification plant was that during the last four months of the year the average length of filter runs between washings was about 50 per cent greater than during the other eight months of the year. However, the loss of head just before washing was no greater during this period than during the first eight months of the year. There may be some connection between the greater length of run between washings during the last four months of the year and the fact that during those months the period of coagulation averaged 16½ hours while during the other eight months it averaged 14½ hours. These suggestions are our own and it is quite possible that the facts pointed out are largely coincidences, since other conditions, such as turbidity of the water, rates of consumption, etc., may have been the deciding factors. In washing the filters no air was used in 1918. Water was used an average of five minutes per washing. The percentage of wash water averaged 0.8 for the year, the maximum being 1.3 in March and May and the minimum 0.5 in November.

During the year the chemicals were applied to the water at the following rates: Sulphate of alumina, maximum monthly average, 514 pounds per million gallons in February; minimum monthly average, 114 pounds in July. Lime, maximum average, 543 pounds in February. Soda ash, maximum average, 1,058 pounds per million gallons in November; minimum average 400 pounds in June. The turbidity of the river water was 10 or less during 145 days, 11 to 25 during 137 days, and was above 500 during eight days. The mean turbidity for the year was 56 and the mean color was 18.

CENTRALIZED BUYING FOR MUNICIPALITIES

Centralized buying for municipalities is recommended by the National Association of Purchasing Agents. At a recent meeting of the Legislative Committee of this organization of the nation's buyers, the following resolution was adopted:

"WHEREAS, Substantial economies are being effected by various municipalities, states, federal departments, and other governmental bureaus through a centralized purchasing department in charge of a purchasing agent, be it

"RESOLVED, That we recommend that all local associations affiliated with The National Association of Purchasing Agents take a keen interest in the movement and encourage the general establishing of such departments. Further, be it

"RESOLVED, That the local association of The National Association of Purchasing Agents use their best endeavors to have legislation framed which will permit the incumbents of such departments to perform their duties in a free and untrammelled manner, secure from political influence."

"RESOLVED, That each local association be requested by this committee to take up with the city administrations of their respective municipalities the question of encouraging a central buying division in conformity with the resolution of the Legislative Committee adopted at the meeting of the Board of Directors of The National Association of Purchasing Agents, at Pittsburgh, January 11."

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SIMON BARR, Assistant Editor
CHARLES CARROLL BROWN, Western Editorial Representative

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GARBAGE DISPOSAL COSTS AND CONTRACTS.

The recent history of garbage disposal plans and bids for the city of Baltimore presents several very interesting features, among them the relative costs to the city of different methods of disposal, and the length of the contract period.

About a year ago a bid was received from a contractor who intended to treat the garbage by a reduction process and offered the city 35 cents a ton for the garbage delivered on scows at the water front. It had previously cost the city \$1.06 a ton for disposal by another reduction process. At present and until May 1st, when pig feeding is to begin, the city is disposing of the garbage by burying it in shallow trenches, the cost being 85 cents a ton. Under a contract entered into last December, the city is to receive a sum (based upon the market price of hogs from month to month) estimated at about 45 cents per ton, the city to provide the water transportation to the farm, which the city estimated will cost \$15,000 a year, or about 20 cents a ton. Deducting the estimated cost of this transportation, the net return to the city is therefore estimated at more than 20 cents a ton.

The most striking feature of these figures is that, whereas the city formerly paid a large sum for disposing of the garbage, it received bids last year from parties, some of whom proposed to use reduction and others to feed to pigs, under the terms of which bidders it would receive a net income. (None of these calculations or figures included cost of collecting.) This experience of Baltimore is not unique, for until a very few years ago practically every city was disposing of its garbage at a net loss, no matter what the method; while during the past five years several cities have made contracts for disposing of it at a net profit. The several costs and bids at Baltimore, however, all occurring within a year, emphasize the change in this respect that has taken place quite recently, and demonstrate that there is a value in garbage that, at least under certain conditions as to size of city and location, can be made to yield a net profit over the cost of treatment.

The lengths of contract periods proposed by the city, and which were determined upon presumably after careful consideration, also give prominence to a matter that is well known but seems to be disregarded by many city officials in asking for bids. Baltimore offered a

contract for reduction for an eleven-year term, and later for a sixteen-year term; while the term for the pig-feeding contract was five years. The reason for this was, of course, a simple business one. A contractor must calculate to recover the entire cost of his plant, less any scrap value it may have, in addition to the cost of operation, and this plant cost must be recovered during the period of the contract. If the construction cost less scrap value of a plant should be \$600 for each ton of daily capacity, this would amount to about \$2 per ton treated if operated for one year only but to only 12 cents a ton if operated for sixteen years. Add 5 per cent. interest, and the contractor must add to his operating expenses \$2.10 if he has a one-year contract, but only 22 cents under a sixteen-year contract. That is, under the one-year contract the contractor must charge the city \$1.88 a ton more (or pay the city \$1.88 a ton loss) than if he had a sixteen-year contract. Of course the contractor may take a chance on being able to renew the contract and reduce his price correspondingly, and undoubtedly contracts heretofore have been made with this idea in view, a contractor who has already partially paid for his plant being able to bid somewhat lower at the next letting than another who must erect an entirely new plant for the purpose.

The most advantageous period for a contract would appear to be that of the economical life of the plant. If a contract should be for twenty years and the original plant should depreciate so greatly at the end of fifteen years as to necessitate the erection of a new plant, the contractor would, for the remaining five years, be at the same disadvantage as though having to operate under a five-year contract. It would appear, therefore, that a contract period might be made too long as well as too short to secure the most favorable bid. As the life of different plants would probably vary, there are certain advantages, apparently, in asking the bidders to themselves name the duration of the contract as well as the financial terms. It was undoubtedly because of this relation between term of contract and life of plant that Baltimore did not think it necessary to make the term of the pig-feeding contract longer than five years, since the plant necessary is comparatively inexpensive, consisting chiefly of feeding platforms and shelter, and if these be made of timber, possibly five years would see many of them depreciated to the point where new construction or extensive repairs would be required. Also, in pig raising, it is easy for the contractor to sell out the entire herd on a few weeks' or months' notice at little or no loss.

In spite of the simple and undisputed argument in favor of giving a contract for a term of years where there is involved a fixed plant of considerable cost, a number of cities have persisted in letting contracts for only one or two years at a time for the disposal of garbage and other refuse or for other work requiring permanent plants. It has been a scandal for years that in one of our largest cities the officials have persisted in this practice, and in addition have generally given only a few days or weeks in which to prepare bids, and frequently only two or three months after bidding before the contract is to go into effect, allowing only this short period for the officials to decide upon the awarding of the contract and the successful bidder to erect his plant; and there is no assurance that the awarding of the contract will not be delayed during the greater part of this period if the low bidder is not favored by the officials in charge.

There are several variations in contract which may be employed to eliminate a part of this disadvantage of a short term. For instance, the city may agree to

take over the plant from the contractor by paying the cost less a stated amount for depreciation, in which case the contractor would need to include in his price only a sum sufficient to return to him the estimated depreciation rather than the entire cost of the plant. Or the city may build the plant itself and turn it over to whatever contractor may be given the contract for the time being; or it may of course operate the plant itself. But where it is a case of a straight contract for this or any other kind of work which requires a fixed and permanent plant, it should be realized that it is possible for a contractor to make a very considerable reduction in price if he can count with certainty on a long term of years in which to recover the construction cost of his plant.

NO OPENINGS IN PENNSYLVANIA STATE ROADS.

The highway commission of Pennsylvania, Lewis S. Sadler, has recently announced that "there will be absolutely no deviation from the rule that no permanent pavement will be put down in the boroughs of Pennsylvania, so far as the State Highway department is concerned, until every pipe or sewer connection is made on the thoroughfare to be improved. This announcement is in line with Governor Sproul's determination that there shall be no waste of state highway funds." Borough authorities must agree that for at least five years after completion the pavement may not be disturbed, unless in case of extraordinary emergency; and the state will insist that such agreements be lived up to.

Commissioner Sadler believes that this policy will save the commonwealth many hundreds of thousands of dollars, and he is firm in his determination to have it carried out.

LABOR CONDITIONS IN THE UNITED STATES*

Opinions and Figures Submitted by Contractors and the Department of Labor—Effect of Immigration and Emigration.

Forty-two cities expect labor to be more plentiful this year than last, and twenty-eight of the cities give as a reason the termination of war, closing of war industries and return of soldiers. Sixteen cities report plenty of labor now and in sight. Only two cities suggest additional sources. One New York city thinks immigration should not be prohibited, and one California city suggests Mexican labor. Three cities have secured labor from state labor exchanges with good results; seven have had poor results with such labor.

Thirty-nine cities report that they will need 19,160 laborers during the season of 1919. Forty-three cities report that they will spend \$46,570,613 in highway and street work this season.

Replies from Contractors: Twenty-four contracting firms, well distributed throughout the country, make replies which may be summarized as follows:

The average rate of wages they paid in 1912 was \$1.92; in 1913 it was \$.20; in 1914, \$.21; in 1915, \$.23; in 1916, \$.256; in 1917, \$.315; in 1918, \$.397. The average wage which they expect to pay in 1919 is \$.38.

Sixteen contractors expect labor to be more plentiful on account of cessation of war activities and the return of soldiers. It is interesting to note that just half of these contractors suggest immigration as the source of further labor supply.

Nine contractors have used labor from state labor exchanges. Six report "poor" results; one reports "bad" results, and two state that results were indifferent.

Information from United States Department of Labor: In the preliminary collection of data for this report your committee ascertained that the Department of Labor, through its employment offices distributed throughout the country, was keeping a close tab on employment conditions, that reports were regularly made to Washington, assembled and published and that beginning soon after the signing of the armistice the number of cities reporting unemployment has been growing weekly. The chairman of your committee was privileged about three weeks ago to have about an hour's interview with Mr. Otto T. Mallery, executive secretary of the War Labor Policies Board of the United States Department of Labor. It was learned that this Board are rather apprehensive of a serious condition of unemployment. The director of the Board, Mr. Harold G. Moulton, had just recently delivered an address before the Union League Club of Chicago upon the subject of "Public Works or Public Charity." This address, which has been published, sets forth very concisely the problem of demobilization or equalizing the rate of flow of labor from war activities to peace activities. By a chart Mr. Moulton very clearly illustrates that the bulk of labor at the time the armistice was signed was found in the following reservoirs: Men under arms abroad, estimated to be about 2,000,000; men under arms in the United States, estimated to be about 1,600,000; workers in inconvertible industries, that is to say, munitions factories, possibly 3,000,000 or 4,000,000 of men and women. Supplementing the labor in these reservoirs will be the new immigration, which is problematical, and the natural increase of working population by way of boys reaching maturity.

From all of these sources Mr. Moulton concludes that during the next twelve months it is probable that 5,000,000 or 6,000,000 workers will seek employment in this country.

The problem, of course, is to return these workers to peace time activities in such a way as to avoid a large volume of unemployment, to maintain labor standards, to avoid serious falls in the rate of wages, to maintain production at a high level and to remove the possibility of depression.

As many of the industries which would, under peace conditions, absorb these laborers, were dismantled and refitted for war work, and as many new plants were built in the early months of the war and fitted for war work exclusively and will now have to be refitted for peace time production, it is apparent that there may be some hiatus in employment, unless perchance public works of a large volume can be provided to consume this labor during the process of transition. Mr. Moulton very properly describes this employment as buffer employment and shows by his chart that the labor upon demobilization from the war activities should flow through this buffer employment and finally be located in peace time activities.

Mr. Moulton points out that we must depend principally on public works, federal, state and city projects to absorb this surplus labor.

The War Labor Policies Board has been instrumental in having introduced in Congress a bill, known as the Kenyon bill, providing for the creation of an emergency public works commission, to be furnished with appropriations and authority and at periods of unemployment to prosecute various kinds of public works and to assist

*Continued from page 209.

political sub-divisions to carry on local public works by advancing the necessary funds, which would be repaid in installments. During normal times this commission would cease activities.

The State of Pennsylvania passed similar legislation about two years ago.

It is interesting to note in a recent report of Mr. Mallery, executive secretary of the War Labor Policies Board, for consideration of the members of the Public Works Commission of Pennsylvania, the following list of activities suggested for providing employment for surplus labor:

1. Highways.
2. Forestry.
3. Water conservation and control.
4. Health.
5. Public works of cities and towns.

Note that highways are placed first. The following explanatory statement is interesting: "Highway construction is particularly useful in providing employment for unskilled workers, upon whom the greatest burden of suffering falls in bad times. The geographical distribution of highway work is another element of advantage for our purpose because it will diminish unemployment in many districts at the same time."

At the conclusion of the interview with Mr. Mallery at Washington he stated to the chairman of your committee very emphatically that the road builders of the country should rest assured that plenty of common labor for all highway construction work would be available during the present season.

An interesting point that was brought out in the interview was the following: Mr. Mallery's attention was directed to the idea, which seems to be prevalent quite generally, that discharged soldiers will not want to take up the work of common laborers. He quite agreed, and stated that discharged soldiers will probably be given work as mechanics and the so-called mechanics, who have been working in munitions plants for periods of from three months to a year, will have to go back to the work which they formerly did, namely, common labor. In other words, those who have been employed in the mechanical trades during the last two years will be displaced by returning soldiers.

Press reports to the effect that the House Immigration Committee of Congress has recently reported a bill which would close against the immigrant for a period of four years the hitherto open American door furnish an illuminating view of the labor conditions as they are seen by Congress. Sponsors for and framers of the bill say it is designed to allow this country to get back to a firm industrial basis without the burden of absorbing a million or more immigrants annually and to guard against foreign political agitators attempting to infect American labor with the views of Bolshevism.

EMIGRATION.

It would hardly seem proper to close this discussion without referring briefly to the fact that many foreigners, whom we naturally think of as unskilled laborers, are leaving this country. In the New York American of February 9, 1919, is a statement that during January last 23,000 Greeks and Italians left the port of New York for the lands of their nativity. Nationals of these countries are leaving as fast as ships can carry them. The collector of the port of New York states that there are many more anxious to go home than can be transported, and thousands are on the waiting list. In the first week of February 16,000 Greeks and Italians sailed for their homes. The collector, in an interview, makes the following statement with respect to these aliens:

Most of them are of the laboring class, and during the war they have been working in munition factories, making more money than they ever made before, and saving it. With a few thousand saved, the Italian laborer's dream is to settle down in the old country, retire from active work and live in comfort.

At first blush it seemed to me that conditions in this country would be improved by the departure of so many foreigners, that for every one who sailed away there would be a job for a returning soldier. But on reflection I realized that our returning soldiers will not want the jobs these men are vacating.

These Italians and Greeks are laborers who have been building roads and doing the really hard work. Our soldiers have had enough of that kind of work in the trenches. And as a matter of fact, our army was composed of skilled mechanics, salesmen, clerks and mental workers, and the proportion of laborers was small. I am wondering, therefore, if this migration continues, what the United States will do for unskilled labor.

The collector's view with respect to the kind of men who have made up our army confirms Mr. Mallery's statement that soldiers will take up mechanical work and displace those who have been drawn into this line of work during the war.

TEXAS BOARD OF HEALTH REPORT.

The annual report of the Bureau of Sanitary Engineering of the Texas State Board of Health records a most commendable activity in that state along the lines of sewerage and sewage treatment, water purification, refuse disposal, and sanitation generally. More than 160 cities and towns have sewage treatment plants in operation or under construction, and this number would have been greater but for the interference of war conditions. It is admitted that, as in other states, not all of the plants are perfect, but this is attributed to the failure of the cities to have the plans passed upon by the bureau or to construct and operate them in the way recommended.

Texas is peculiarly the home of the activated sludge method, there being ten such plants in operation there, one of them being the first in the world to treat the entire sewage of a city.

The bureau has designed, for use in outlying districts where sewerage is impracticable, an incinerator closet for disposing of night soil that has given very favorable results.

Two hundred and seventy cities and towns in the state have water supply systems, 39 of them treating the water in some way, 11 by settling only, 4 by liquid chlorine, 2 by hypochlorite, 21 by filtering and one by "straining." Seventy of the works are privately owned, 199 are municipal, and one city has both private and municipal.

There are 28 incinerators in the state, two of them being connected with institutions. "Most of these plants were built at a nominal cost, and the interest on the investment and cost of destruction is less than the extra expense of long hauls to dumping grounds, which are a menace to the health of any community where they exist. The construction of efficient incinerators should be encouraged and the nuisance created by the dumping ground abated. Poorly constructed plants with high operating costs retard progress in this line of sanitation." Four of the plants are of the Decarie type, 5 of the McGuire type, one Dixon, one Nye, three were designed by the State Board of Health, and the others were of less well known make.

The municipal sewage treatment plants operating in the state number 140, of which 57 include Imhoff tanks, 55 include septic tanks, 12 plain settling tanks, and 9 activated sludge tanks. In addition there are 35 septic tanks at county institutions.

NEWS OF THE SOCIETIES

March 25, 26.—AMERICAN WATER WORKS ASSOCIATION, ILLINOIS SECTION. Eleventh annual meeting, Urbana, Ill. Secretary, G. C. Habermeyer, acting chief, State Water Survey, Urbana.

April 14-19.—UNITED STATES GOOD ROADS ASSOCIATION. Annual convention, Mineral Wells, Tex. Secretary, F. A. Rountree, Birmingham, Ala.

April 16-17.—AMERICAN WATER WORKS ASSOCIATION, IOWA SECTION. Fourth annual meeting, State University, Iowa City, Ia. Acting Secretary, J. H. Dunlap, State University.

April 25-26.—AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE. Annual meeting, Philadelphia, Pa. Secretary, J. P. Lichtenberger, Logan Hall, West Philadelphia, Pa.

June 9-13.—AMERICAN WATER WORKS ASSOCIATION. Thirty-ninth annual convention, Iroquois Hotel, Buffalo, N. Y. Secretary, J. M. Diven, 47 State street, Troy, N. Y.

Nov. 12-14.—AMERICAN SOCIETY FOR MUNICIPAL IMPROVEMENTS. Annual convention, New Orleans, La. Secretary, Charles C. Brown, Bloomington, Ill.

New Jersey League of Municipalities.

Representatives from municipalities in all parts of New Jersey were present at the annual meeting of the New Jersey State League of Municipalities held at Trenton recently.

The opening session was largely taken up with the presentation and reading of reports. Mayor Seger, the retiring president, reviewed the activities of the organization and outlined the fight that the league had made against the Public Service Corporation in the rate increase for trolley service.

Mayor Seger announced the appointment of the following as a legal advisory board to give consideration to all pertinent legal matters involving the various member municipalities of the organization: Jerome T. Congleton, city counsel for Newark; Charles R. Reed, Plainfield; Albert O. Miller, Jr., Passaic; Charles E. Bird, Trenton; Francis C. Scott, Paterson, and Harry Miller, Asbury Park.

It was the sense of the league that this state's municipalities, through the league, should continue their fight against boosts in street railway fares, particularly in those instances where the cost of service has been increased, notwithstanding municipal franchise contracts providing for maximum rates for service.

Following a talk by George L. Record of Jersey City, who said he had but little faith in litigation to cure the troubles between the public and the street car companies, mayors Gillen, of Newark; Calkins, of Plainfield, and Seger, of Passaic, conferred and decided to refer to the league's executive committee for final decision the question of appealing to the United States Supreme Court either the Collingswood case decision or the general trolley fare edict. Either case, Mr. Record said, would be suitable for the purpose. He pointed out that in both the state had abrogated the contracts

made between the utility corporations and the municipalities, adding: "I have advised Passaic to cancel the franchise. Jersey City has done likewise."

Mr. Record insisted that the Supreme Court of the state had read into the law something that is not in it, that never was intended to be put in it, or, if it had been in it would never have been enacted.

Continuing, he said: "Does any one realize the far-reaching effect of a decision of this kind? Where do we stand in these matters? In the face of such decisions where do our rights begin and end? This is what will happen: The corporations, with their holding companies and their manipulations through them, cannot and will not give the service the people require, and must therefore turn their properties over to the public. The corporations and the public must meet and by a reasonable agreement these utilities must be turned over to the ownership of the people and by them operated as we do our schools and other public institutions. Massachusetts and other states have practically come to this. New York is rapidly coming to it and eventually they will all fall in line."

Dorsey Hyde, Jr., municipal reference librarian of New York, spoke on the fate of the five cent fare. He said that he believes the solution of trolley transportation problems lies in representation of the municipalities at the "trolley peace table." He expressed the belief that relief will eventually come either through municipal ownership or municipal control of the lines.

Legislation recommended by the lawyers' committee included a measure to enable municipalities to pay a bonus to any of its employees during the high cost of living period, a bill to bar the taking out of tax ratables any more taxable property, a bill enabling school boards to take over municipal playgrounds and empowering them to conduct complete recreation systems.

A warning as to the condition of the police and firemen's funds as well as teachers' retirement fund, was given by Assemblyman Arthur N. Pierson, chairman of the Pension and Retirement Fund Commission, authorized by the last legislature. Once more Mr. Pierson declared that all of them are insolvent and as he put it, must sooner or later break down. "Those affected by existing pensions," said Mr. Pierson, "have shown special interest in the investigation and proposals of the commission in connection with uniform pension laws. Public officials and taxpayers have seemed to be insensible to the real condition of existing pension funds, or else they shrink from taking a part in the matter for fear of incurring the disfavor of some who are members of the fund."

Membership of the league increased during the last year from 158 to 185 municipalities. Mayor Seger, of Passaic, the retiring president of the league, commended the bureau of information and research that has been established at Princeton University, and said that a similar bureau will be established at Rutgers College.

The officers elected by the league were as follows: President, mayor Leighton Calkins, of Plainfield, to succeed mayor George N. Seger, of Passaic; vice-president, mayor Charles P. Gillen, of Newark, second vice-president, mayor Louis F. Dodd, of Montclair; third vice-president, mayor Harry Bacharach, of Atlantic City; secretary, Homer Talbot, former secretary of the Kansas City League of Municipalities; treasurer, Clinton J. Schwartz, tax receiver of Trenton.

The executive committee named by president Calkins consists of the following: mayor Frederick W. Donnelly, Trenton; commissioner Raymond, Newark; mayor Frank Hague, Jersey City; mayor Daniel J. Garber, Ridgewood; mayor C. E. F. Hetrick, Asbury Park; mayor Thomas W. Jack, Collingswood; mayor Frank Dorsey, Perth Amboy; mayor Washington Wilson, Metuchen; mayor Victor Mravlag, Elizabeth; mayor Emil Diebitsch, Nutley; mayor David H. Slaybach, Verona, and mayor J. P. Potter, Clayton.

PERSONALS

Harrison, B. Powell, has been appointed harbor engineer of Baltimore, Md. Mr. Harrison is a graduate of the Virginia Military Institute. He was employed on the Panama Canal for three years, and acted in various engineering capacities for the Baltimore and Ohio Railroad. He was engaged on the filtration plant at Washington for two years and was engineer in charge of dredging and survey work on Patapsco River and Chesapeake Bay for four years, or until 1912. Since then he has been division engineer, second assistant engineer and first engineer of the State Roads Commission until the present appointment. He is a member of the American Society of Civil Engineers.

Jarvis, Frank, has been appointed commissioner of safety of White Plains, N. Y., by the common council.

Reynolds, Major Myron B., who was recently released from his command of the 208th Engineer Sappers, 18th Division, Camp Travis, Texas, has been appointed acting assistant city engineer of Chicago, succeeding Henry W. Clausen, who resigned January 1 to enter private business. Major Reynolds was engineer of water-works design in Chicago for four years previous to his entry into Government service in September, 1917. He was with the city engineering department for thirteen years.

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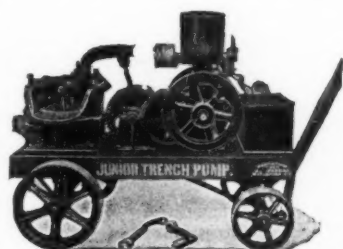
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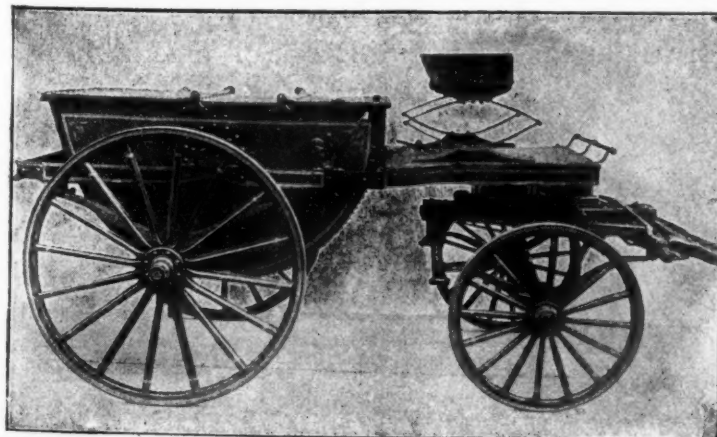
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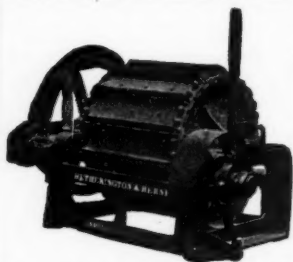
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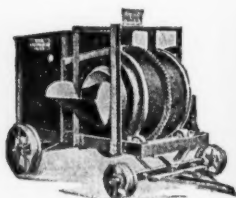
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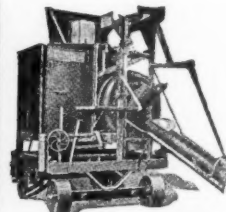
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